



**2020 Capitalization Rate Study
Large Telecommunications**

FINAL

Completed: April 28, 2020

MONTANA DEPARTMENT OF REVENUE

Yield Capitalization Rate Conclusion

Industry: Large Telecommunications

2020 Assessment Year

Capital Structure ^[1]

Equity	60.00%
Debt	40.00%

Equity Cost of Capital

		Weighting
Capital Asset Pricing Model - Ex Post ^[2]	7.97%	30%
Capital Asset Pricing Model - Ex Ante ^[2]	6.41%	20%
3 Stage Dividend Discount Model - Dividends ^[3]	8.30%	20%
3 Stage Dividend Discount Model - Earnings ^[3]	8.70%	30%
Weighted Average	7.94%	100%
Selected Cost of Equity	<u><u>7.95%</u></u>	

Debt Cost of Capital

		Weighting
A - Mergent's - Avg. YTM of A Rated Corporate Bonds ^[4]	3.36%	0%
Baa - Mergent's - Avg. YTM of Baa Rated Corporate Bonds ^[4]	3.88%	100%
Ba - MTDOR - Avg. YTM of Ba Rated Corporate Bonds ^[5]	6.58%	0%
Weighted Average	3.88%	100%
Selected Cost of Debt	<u><u>3.90%</u></u>	

Weighted Average Cost of Capital (WACC)

Source of Capital	Capital Structure	Cost of Capital	Marginal Tax Rate	After-tax Cost of Capital	Weighted Cost
Equity	60.00%	7.95%		7.95%	4.77%
Debt	40.00%	3.90%	24.00%	2.96%	1.19%
WACC	100.00%				5.96%
WACC (Rounded)					6.00%

Notes

- [1] From worksheet: Capital Structure
- [2] From worksheet: Capital Asset Pricing Model Summary
- [3] From worksheet: Yield Equity Summary
- [4] January 2020, Mergent Bond Record
- [5] Montana Department of Revenue High Yield Debt Study

MONTANA DEPARTMENT OF REVENUE

Direct Capitalization Rate Conclusion Industry: Large Telecommunications 2020 Assessment Year

Capital Structure ^[1]

Equity	60.00%
Debt	40.00%

Equity Capitalization Rate ^[2]

NOI After-tax	8.00%
GCF	15.50%

Debt Capitalization Rate ^[3]

Calculated Current Yield	4.35%
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NOI After-tax Direct Capitalization Rate

Source of Capital	Capital Structure	Capitalization Rate	Marginal Tax Rate	After-tax Capitalization Rate	Weighted Capitalization Rate
Equity	60.00%	8.00%		8.00%	4.80%
Debt	40.00%	4.35%	24.00%	3.31%	1.32%
Total	100.00%				6.12%
Total (Rounded)					6.20%

GCF Direct Capitalization Rate

Source of Capital	Capital Structure	Capitalization Rate	Marginal Tax Rate	After-tax Capitalization Rate	Weighted Capitalization Rate
Equity	60.00%	15.50%		15.50%	9.30%
Debt	40.00%	4.35%	24.00%	3.31%	1.32%
WACC	100.00%				10.62%
Total (Rounded)					10.70%

Notes:

[1] From worksheet: Capital Structure

[2] From worksheet: Direct Equity Summary

[3] From worksheet: Calculated Current Yield

MONTANA DEPARTMENT OF REVENUE

Selection of Guideline Companies

Industry: Large Telecommunications

2020 Assessment Year

Screening Requirements:

The universe of companies is all companies listed in Value Line under the Cable TV, Telecom Services, and Telecom Utilities industries.

Companies were then selected using the following screening criteria:

1. Market value of equity above 100 billion USD.
2. Incorporated in the United States of America.
3. No significant merger & acquisition activity during the year.

The Value Line industry groups listed above were analyzed to determine which companies had a market capitalization over 100 billion U.S. dollars at December 31, 2019. Initial analysis revealed four companies that met this criteria: Charter Communications (CHTR), Comcast Corp. (CMCSA), AT&T Inc. (T), and Verizon Communications (VZ). All four companies were then verified as incorporated in the United States. Lastly, the four companies were analyzed for significant merger and acquisition activity during the previous year. Finding none, the four companies were selected for use as guideline public companies in estimating the cost of capital in this study.

MONTANA DEPARTMENT OF REVENUE

Support for Capital Structure
Industry: Large Telecommunications
2020 Assessment Year

(\$ and Shares Outstanding In Millions, Except Per Share Amounts)

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Ticker Symbol	Company	Industry Group	Financial Strength	Shares Outstanding	End of Year Closing Stock Price	MV Common Stock	MV Preferred Stock	MV Long Term Debt	PV of Operating Leases	Total Common, Preferred, LT Debt, & Op Leases	% Common	% Preferred	% Debt & Op Leases
		Value Line	Value Line	10-K	Yahoo	ExF	10-K	10-K	10-K	G+H+I+J	G/K	H/K	(I+J)/K
							Note [1]	Note [2]					
CHTR	Charter Communic.	CABLETV	B++	210	485.08	101,855	0	85,386	1,193	188,434	54%	0%	46%
CMCSA	Comcast Corp.	CABLETV	A	4,553	44.97	204,750	0	115,800	4,606	325,156	63%	0%	37%
T	AT&T Inc.	TELESERV	A++	7,255	39.08	283,508	0	182,124	25,255	490,887	58%	0%	42%
VZ	Verizon Communic.	TELESERV	A++	4,291	61.40	263,494	0	130,316	21,654	415,464	63%	0%	37%
All Companies						853,607	0	513,626	52,708	1,419,941	60%	0%	40%
Average											60%	0%	40%
Median											60%	0%	40%
High											63%	0%	46%
Low											54%	0%	37%
Selected											60%		40%

Notes:

[1] Market value of preferred stock assumed to equal book value

[2] Market value of debt is fair value of long term debt from 10-K notes

MCA 15-1-210, rationale for changes to guideline companies:

2020 - No changes to guideline companies.

YE 2019 Median	60%	0%	40%
YE 2018 Median	56%	0%	44%
YE 2017 Median			
3YR AVG			

MONTANA DEPARTMENT OF REVENUE

Capital Asset Pricing Model (CAPM) Industry: Large Telecommunications 2020 Assessment Year

$$k_e = R_f + \beta \times ERP$$

		<i>Ex Post</i>	<i>Ex Ante</i>
k_e =	Cost of Equity	7.97%	6.41%
R_f =	Risk Free Rate	2.25%	2.25%
β =	Beta	0.80	0.80
ERP =	Equity Risk Premium ($R_m - R_f$)	7.15%	5.20%
R_m =	Market Rate of Return	9.40%	7.45%

Risk Free Rate Measures (R_f):

The Value Line Investment Survey: Selection & Opinion^[1]

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Selected Yields on Taxable U.S. Treasury Securities as of 12/24/19

10-year	1.90%
30-year	2.33%

Federal Reserve Statistical Release^[2] and U.S. Department of the Treasury, Daily Treasury Yield Curve Rates^[3]

U.S. government securities, Treasury constant maturities, Nominal, December 31, 2019

10-year	1.92%
20-year	2.25%
30-year	2.39%

Risk Free Rate Selected

2.25%

Notes

[1] "Value Line Selection & Opinion", Value Line (January 3, 2020)

[2] <https://www.federalreserve.gov/datadownload/Choose.aspx?rel=H.15>

[3] <https://www.treasury.gov/resource-center/data-chart-center/interest-rates/>

Ex Post - Equity Risk Premium Measures ($ERP = R_m - R_f$)

Duff & Phelps, 2020 Cost of Capital Navigator

		R_m ^[4]	R_m	R_f	ERP
ERP "Historical" - <i>Ex Post</i>	<i>Arithmetic Avg.</i>	9.40%	9.40%	2.25%	7.15%

MONTANA DEPARTMENT OF REVENUE

Capital Asset Pricing Model (CAPM)

Industry: Large Telecommunications

2020 Assessment Year

$$k_e = R_f + \beta \times ERP$$

ERP "Supply-side" - *Ex Post*

Arithmetic Avg.

8.42%

8.42%

2.25%

6.17%

Ex Post Equity Risk Premium Selected

9.40%

2.25%

7.15%

MONTANA DEPARTMENT OF REVENUE

Capital Asset Pricing Model (CAPM)

Industry: Large Telecommunications

2020 Assessment Year

$$k_e = R_f + \beta \times ERP$$

Ex Ante - Equity Risk Premium Measures (ERP = R_m - R_f)

DOR 3 Stage Dividend Growth Model, S & P 500, See Exhibit

	<u>R_m^[4]</u>	<u>R_m</u>	<u>R_f</u>	<u>ERP</u>
ERP - <i>Ex Ante</i>	7.35%	7.35%	2.25%	5.10%

Duff & Phelps, 2020 Cost of Capital Navigator

	<u>R_m^[4]</u>	<u>R_m</u>	<u>R_f</u>	<u>ERP</u>
ERP "Conditional" - <i>Ex Ante</i>		8.00%	3.00%	5.00%

Damodaran Implied ERP (Jan 8, 2020)

	<u>R_m^[4]</u>	<u>R_m</u>	<u>R_f</u>	<u>ERP</u>
Implied Premium (FCFE) - <i>Ex Ante</i>	7.45%	7.12%	1.92%	5.20%
Implied Premium (FCFE with sustainable payout) - <i>Ex Ante</i>	7.31%	6.98%	1.92%	5.06%

	<u>R_m^[4]</u>	<u>R_m</u>	<u>R_f</u>	<u>ERP</u>
<u>Average</u>	7.37%	7.36%		5.09%
<u>Median</u>	7.35%	7.24%		5.08%
<u>High</u>	7.45%	8.00%		5.20%
<u>Low</u>	7.31%	6.98%		5.00%

Equity Risk Premium Selected

7.45%	2.25%	5.20%
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Notes

[4] R_m estimated using selected Risk Free Rate (R_f)

MONTANA DEPARTMENT OF REVENUE

Support for Beta Selection in CAPM
Industry: Large Telecommunications
2020 Assessment Year

A	B	C	D	E
Ticker Symbol	Company	Industry Group	Financial Strength	Beta
		<i>Value Line</i>	<i>Value Line</i>	<i>Value Line</i>
CHTR	Charter Communic.	CABLETV	B++	1.05
CMCSA	Comcast Corp.	CABLETV	A	0.85
T	AT&T Inc.	TELESERV	A++	0.75
VZ	Verizon Communic.	TELESERV	A++	0.70
Average				0.84
Median				0.80
High				1.05
Low				0.70
Selected				0.80

MONTANA DEPARTMENT OF REVENUE

Inflation & Real Growth Industry: Large Telecommunications 2020 Assessment Year

A	B	C	D	Nominal Growth	
				E	F
Source Description	Inflation (CPI)	Real Growth (GDP)	Nominal Growth	Low	High
Livingston Survey ^[1]	2.19%	2.14%	4.33%		
Survey of Professional Forecasters ^[2]	2.23%	2.03%	4.26%		
Congressional Budget Office ^[3]	2.40%	2.20%	4.60%		
Average	2.27%	2.12%	4.40%		
Median	2.23%	2.14%	4.37%		
High	2.40%	2.20%	4.60%		
Low	2.19%	2.03%	4.22%		
Selected	2.20%	2.20%	4.40%	4.22%	4.60%

Inflationary Trend Factors						
Year	Dec. CPI-U Index	Percent Change From Previous	Dec. to Dec. Conversion Factor	Annual Avg. CPI-U Index	Percent Change From Previous	Annual Conversion Factor
	<i>Note [5]</i>	<i>Note [6]</i>	<i>Note [7]</i>	<i>Note [5]</i>	<i>Note [6]</i>	<i>Note [7]</i>
2007	210.036		1.2235	207.342		1.2330
2008	210.228	0.1%	1.2224	215.303	3.7%	1.1874
2009	215.949	2.6%	1.1900	214.537	-0.4%	1.1917
2010	219.179	1.5%	1.1724	218.056	1.6%	1.1724
2011	225.672	2.9%	1.1387	224.939	3.1%	1.1366
2012	229.601	1.7%	1.1192	229.594	2.0%	1.1135
2013	233.049	1.5%	1.1027	232.957	1.4%	1.0974
2014	234.812	0.8%	1.0944	236.736	1.6%	1.0799
2015	236.525	0.7%	1.0865	237.017	0.1%	1.0786
2016	241.432	2.0%	1.0644	240.007	1.2%	1.0652
2017	246.524	2.1%	1.0424	245.120	2.1%	1.0430
2018	251.233	1.9%	1.0229	251.107	2.4%	1.0181
2019	256.974	2.2%	1.0000	255.657	1.8%	1.0000

Notes

[1] Federal Reserve Bank of Philadelphia The Livingston Survey December 13, 2019 Table 3 Inflation Rate and Real GDP mean

<https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey>

[2] Federal Reserve Bank of Philadelphia Survey of Professional Forecasters February 14, 2020 Table 8 and Table 9 Average over next 10-Year mean

<https://www.philadelphiafed.org/research-and-data/real-time-center/survey-of-professional-forecasters/2020/survq120>

[3] Congressional Budget Office, The Budget and Economic Outlook: 2020 to 2030, Table 2-1

<https://www.cbo.gov/about/products/budget-economic-data#4>

[5] Historical Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, all items, index averages (1982-84=100, unless otherwise noted)

<https://www.bls.gov/cpi/tables/supplemental-files/historical-cpi-u-202001.pdf>

[6] (Row year - Previous Year) / Row Year

[7] Most current year / Row year

MONTANA DEPARTMENT OF REVENUE

3 Stage Dividend Discount Model (DDM)

Industry: Large Telecommunications

2020 Assessment Year

$$k_e = (D_1 / P_0) + g$$

k_e = Cost of Equity

D_1 = Expected Dividend

P_0 = Current Price Per Share

g = Sustainable Long-Term Growth

A	B	C	D	E	F	G	H	I
Ticker	Company	2019 Year End Stock Price	2020 Est Div'ds Decl'd per sh	Expected Equity Payout Yield	Sustainable Long-Term Growth Rate ^[1]	Sustainable Long-Term Growth Rate ^[1]	Cost of Equity Dividend Growth	Cost of Equity Earnings Growth
		<i>Yahoo</i>	<i>Value Line</i>	<i>D/C</i>	<i>Dividends</i>	<i>Earnings</i>	<i>E+F</i>	<i>E+G</i>
		P_0	D_1	D_1/P_0	g	g	k_e	k_e
CHTR	Charter Communic.	485.08	0.00	0.00%				
CMCSA	Comcast Corp.	44.97	0.90	2.00%	5.20%	5.52%	7.20%	7.52%
T	AT&T Inc.	39.08	2.08	5.32%	5.20%	5.52%	10.52%	10.84%
VZ	Verizon Communic.	61.40	2.37	3.86%	3.12%	3.71%	6.98%	7.57%
Average							8.24%	8.64%
Median							7.20%	7.57%
High							10.52%	10.84%
Low							6.98%	7.52%
Selected							8.30%	8.70%

Notes

[1] From worksheet: DDM Sustainable Long-Term Growth

MONTANA DEPARTMENT OF REVENUE

Support for DDM - Short Term Growth Rate Calculations

Industry: Large Telecommunications

2020 Assessment Year

A	B	C	D	E	F	G
Ticker	Company	End of Year Closing Stock Price	Div'ds Decl'd per sh 2020 Est ^[1]	Expected Dividend Yield	Div'ds Decl'd per sh 2023-2025 Est ^[1]	Short Term Growth Rate
		<i>Yahoo</i>	<i>Value Line</i>	<i>D / C</i>	<i>Value Line</i>	<i>Note [2]</i>
CHTR	Charter Communic.	485.08	0.00	0.00%	0.00	
CMCSA	Comcast Corp.	44.97	0.90	2.00%	1.20	7.46%
T	AT&T Inc.	39.08	2.08	5.32%	2.60	5.74%
VZ	Verizon Communic.	61.40	2.47	4.02%	2.62	1.48%

A	B	C	D	E
Ticker	Company	Earnings per share 2020 Est ^[1]	Earnings per share 2023-2025 Est ^[1]	Short Term Growth Rate
		<i>Value Line</i>	<i>Value Line</i>	<i>Note [2]</i>
CHTR	Charter Communic.	13.50	28.00	20.01%
CMCSA	Comcast Corp.	3.30	4.50	8.06%
T	AT&T Inc.	3.65	4.65	6.24%
VZ	Verizon Communic.	4.95	5.55	2.90%

Notes

[1] From Value Line Tissue

[2] 5 year compound annual growth rate (CAGR) - 4 periods

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Support for DDM - Sustainable Long Term Growth

Industry: Large Telecommunications

2020 Assessment Year

Dividend Growth Rate									Stage 1				
Ticker	Company	Year End Stock Price	Expected Short-Term Dividend Growth Rate	Expected Long-Term Growth Rate	Expected Dividend Yield	Internal Rate of Return	Implied Sustainable Long-Term Growth Rate (g)	Initial Investment	D ₁	D ₂	D ₃	D ₄	D ₅
		Yahoo	Note [1]	Note [2]	D_1/P_0	$K_e = IRR \text{ of } D_1:D_{500}$	$g = IRR - Div. \text{ Yield}$						
CHTR	Charter Communic.	485.08	0.00%	4.40%	0.00%	#NUM!	#NUM!	(485.08)	0.00	0.00	0.00	0.00	0.00
CMCSA	Comcast Corp.	44.97	7.46%	4.40%	2.00%	7.42%	5.42%	(44.97)	0.90	0.97	1.04	1.12	1.20
T	AT&T Inc.	39.08	5.74%	4.40%	5.32%	10.52%	5.20%	(39.08)	2.08	2.20	2.33	2.46	2.60
VZ	Verizon Communic.	61.40	1.48%	4.40%	4.02%	7.14%	3.12%	(61.40)	2.47	2.51	2.54	2.58	2.62

Earnings Growth Rate									Stage 1				
Ticker	Company	Year End Stock Price	Expected Short-Term Earnings Growth Rate	Expected Long-Term Growth Rate	Expected Dividend Yield	Internal Rate of Return	Implied Sustainable Long-Term Growth Rate (g)	Initial Investment	D ₁	D ₂	D ₃	D ₄	D ₅
		Yahoo	Note [1]	Note [2]	D_1/P_0	$K_e = IRR \text{ of } D_1:D_{500}$	$g = IRR - Div. \text{ Yield}$						
CHTR	Charter Communic.	485.08	20.01%	4.40%	0.00%	#NUM!	#NUM!	(485.08)	0.00	0.00	0.00	0.00	0.00
CMCSA	Comcast Corp.	44.97	8.06%	4.40%	2.00%	7.65%	5.65%	(44.97)	0.90	0.97	1.05	1.14	1.23
T	AT&T Inc.	39.08	6.24%	4.40%	5.32%	10.84%	5.52%	(39.08)	2.08	2.21	2.35	2.49	2.65
VZ	Verizon Communic.	61.40	2.90%	4.40%	4.02%	7.73%	3.71%	(61.40)	2.47	2.54	2.62	2.69	2.77

Notes

[1] From worksheet: DDM Short Term Growth Rate Calculations

[2] From worksheet: Inflation & Real Growth

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Support for DDM - Sustainable Long Term Growth

Industry: Large Telecommunications

2020 Assessment Year

Dividend	Stage 2															Stage 3		
Ticker	D ₆	D ₇	D ₈	D ₉	D ₁₀	D ₁₁	D ₁₂	D ₁₃	D ₁₄	D ₁₅	D ₁₆	D ₁₇	D ₁₈	D ₁₉	D ₂₀	D ₂₁	D ₂₂	D ₅₀₀
CHTR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
CMCSA	1.29	1.38	1.48	1.59	1.70	1.83	1.96	2.10	2.25	2.42	2.59	2.78	2.98	3.20	3.43	3.58	3.74	3,247,686,491
T	2.75	2.90	3.07	3.24	3.42	3.62	3.82	4.04	4.26	4.50	4.76	5.03	5.31	5.61	5.93	6.19	6.46	5,612,171,789
VZ	2.66	2.71	2.75	2.80	2.85	2.90	2.94	2.99	3.04	3.09	3.15	3.20	3.25	3.31	3.36	3.51	3.67	3,184,345,786

Earnings	Stage 2															Stage 3		
Ticker	D ₆	D ₇	D ₈	D ₉	D ₁₀	D ₁₁	D ₁₂	D ₁₃	D ₁₄	D ₁₅	D ₁₆	D ₁₇	D ₁₈	D ₁₉	D ₂₀	D ₂₁	D ₂₂	D ₅₀₀
CHTR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
CMCSA	1.32	1.43	1.54	1.66	1.79	1.93	2.08	2.24	2.42	2.61	2.81	3.03	3.27	3.52	3.80	3.96	4.14	3,593,887,715
T	2.81	2.98	3.17	3.36	3.57	3.78	4.02	4.26	4.52	4.80	5.09	5.40	5.73	6.08	6.46	6.74	7.04	6,113,433,245
VZ	2.85	2.94	3.03	3.12	3.21	3.31	3.41	3.51	3.61	3.72	3.83	3.95	4.07	4.19	4.32	4.51	4.70	4,085,774,340

MONTANA DEPARTMENT OF REVENUE

Support for Yield Capitalization Rate - Debt Rating

Industry: Large Telecommunications

2020 Assessment Year

A	B	C	D	E	F
Ticker Symbol	Company	Industry Group	Financial Strength	Moody's Long Term Rating	Numeric Rating
		<i>Value Line</i>	<i>Value Line</i>	<i>Moodys.com</i>	
CHTR	Charter Communic.	CABLETV	B++	Ba2	12
CMCSA	Comcast Corp.	CABLETV	A	A3	7
T	AT&T Inc.	TELESERV	A++	Baa2	9
VZ	Verizon Communic.	TELESERV	A++	Baa1	8
All Companies					
Average					9
Median					9
High					12
Low					7
Selected				Baa2	9

MONTANA DEPARTMENT OF REVENUE

Support for Direct Capitalization - Equity Capitalization Rates

Industry: Large Telecommunications

2020 Assessment Year

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	
Ticker Symbol	Company	End of Year Closing Stock Price	VL Historic EPS	VL Est EPS	VL Historic P/E Ratio	VL Est P/E Ratio	Ke Estimate - Earnings (Hist. P/E)	Ke Estimate - Earnings (Est. P/E)	VL Historic Cash Flow Per Share	VL Est Cash Flow Per Share	VL Historic P/CF Ratio	VL Est P/CF Ratio	Ke Estimate - Cash Flow (Hist. P/CF)	Ke Estimate - Cash Flow (Est. P/CF)	Market Value of Equity	Book Value of Equity	MTBR	
		Yahoo	Value Line	Value Line	C/D	C/E	1/F	1/G	Value Line	Value Line	C/J	C/K	1/L	1/M	Price x Shrs	10-K	P/Q	
CHTR	Charter Communic.	485.08	7.52	13.50	64.51	35.93	1.55%	2.78%	55.22	64.50	8.78	7.52	11.38%	13.30%	101,855	36,285	2.81	
CMCSA	Comcast Corp.	44.97	3.12	3.35	14.41	13.42	6.94%	7.45%	5.66	6.15	7.95	7.31	12.59%	13.68%	204,750	49,254	4.16	
T	AT&T Inc.	39.08	3.58	3.65	10.92	10.71	9.16%	9.34%	7.52	8.05	5.20	4.85	19.24%	20.60%	283,508	184,221	1.54	
VZ	Verizon Communic.	61.40	4.81	4.95	12.77	12.40	7.83%	8.06%	8.88	8.90	6.91	6.90	14.46%	14.50%	263,494	61,395	4.29	
Average					25.65	18.12	6.37%	6.91%				7.21	6.65	14.42%	15.52%	3.20		
Median					13.59	12.91	7.39%	7.76%				7.43	7.11	13.52%	14.09%	3.48		
High					64.51	35.93	9.16%	9.34%				8.78	7.52	19.24%	20.60%	4.29		
Low					10.92	10.71	1.55%	2.78%				5.20	4.85	11.38%	13.30%	1.54		
Selected							8.00%							15.50%				3.33

MONTANA DEPARTMENT OF REVENUE

Support for Direct Capitalization Cost of Debt Component - Calculated Current Yield

Industry: Large Telecommunications

2020 Assessment Year

(\$ in Millions)

A	B	C	D	E	F	G	H	I	J
Ticker	Company	YE 2019 Interest Exp.	YE 2018 MV LT Debt	YE 2018 BV LT Debt	YE 2019 MV LT Debt	YE 2019 BV LT Debt	2019 Avg MV LT Debt	2019 Current Yield	MTBR
		<i>10-K</i>	<i>10-K</i>	<i>10-K</i>	<i>10-K</i>	<i>10-K</i>	<i>(D+F)/2</i>	<i>(C/H)</i>	<i>(F/G)</i>
CHTR	Charter Communic.	3,797	70,695	72,827	85,386	79,078	78,041	4.87%	1.08
CMCSA	Comcast Corp.	4,567	114,100	111,743	115,800	102,217	114,950	3.97%	1.13
T	AT&T Inc.	8,422	172,287	176,505	182,124	163,147	177,206	4.75%	1.12
VZ	Verizon Communic.	4,730	119,439	113,063	130,316	111,489	124,878	3.79%	1.17
All Companies		21,516			513,626	455,931	495,074	4.35%	1.13
Average								4.34%	1.12
Median								4.36%	1.12
High								4.87%	1.17
Low								3.79%	1.08
Selected								4.35%	1.12

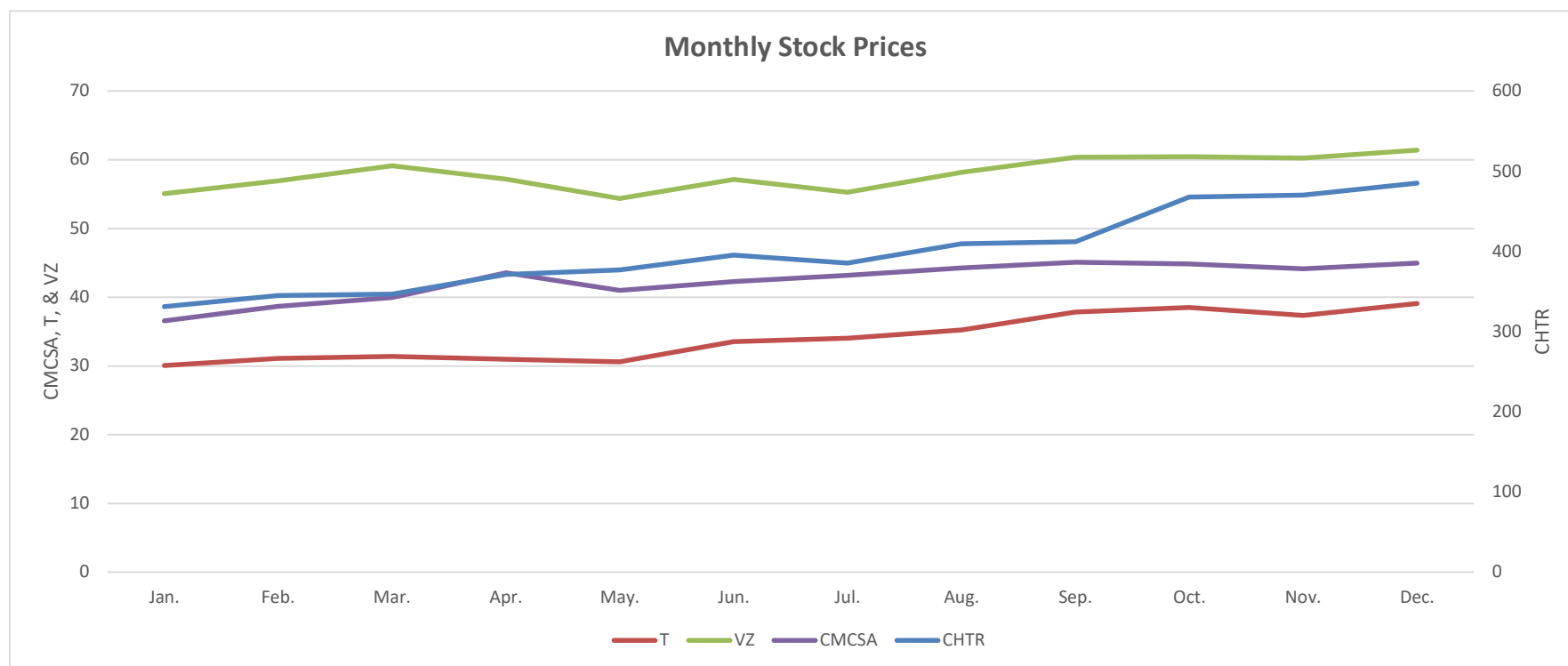
MONTANA DEPARTMENT OF REVENUE

Support of Stock Price - From YAHOO Finance

Industry: Large Telecommunications

2020 Assessment Year

		End of Period Closing Stock Price											
1	2	3	4	5	6	7	8	9	10	11	12	13	14
A	B	C	D	E	F	G	H	I	J	K	L	M	N
Ticker	Company	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
CHTR	Charter Communic.	331.05	344.91	346.91	371.19	376.8	395.18	385.38	409.59	412.12	467.86	470.01	485.08
CMCSA	Comcast Corp.	36.57	38.67	39.98	43.53	41	42.28	43.17	44.26	45.08	44.82	44.15	44.97
T	AT&T Inc.	30.06	31.12	31.36	30.96	30.58	33.51	34.05	35.26	37.84	38.49	37.38	39.08
VZ	Verizon Communic.	55.06	56.92	59.13	57.19	54.35	57.13	55.27	58.16	60.36	60.47	60.24	61.4



MONTANA DEPARTMENT OF REVENUE

Capital Expenditures Estimate Based on Guideline Companies

Industry: Large Telecommunications

2020 Assessment Year

(\$ In Millions)

1	2	3	4	5	6	7	8	9	10	11	
A	B	C	D	E	F	G	H	I	J	K	L
Ticker	Company	Inflation	PP&E, Gross	PP&E, Gross	Average PP&E	Depreciation Expense	Average Life of Assets			Replacement Cost (RC)	RC as % of Depreciation
			Current Year	Previous Year				Note [1]	Note [1]	Note [1]	
		MTDOR (CPI)	10-K, Notes	10-K, Notes	(D+E)/2	10-K (CF)	F/G	C*H	1/(1+C)^H	G*I/(1-J)	K/G
CHTR	Charter Communic.	2.20%	62,247	58,201	60,224	9,926	6	0.13	0.88	10,712	107.92%
CMCSA	Comcast Corp.	2.20%	101,561	95,743	98,652	12,953	8	0.17	0.85	14,210	109.71%
T	AT&T Inc.	2.20%	333,538	330,690	332,114	28,217	12	0.26	0.77	32,335	114.60%
VZ	Verizon Communic.	2.20%	265,734	252,835	259,285	16,682	16	0.34	0.71	19,877	119.16%
Average											112.84%
Median											112.15%
High											119.16%
Low											107.92%
Selected											112.00%

Notes

[1] Cornell, B. & Gerger, R. (2017). Estimating Terminal Values with Inflation: The Inputs Matter-It Is Not a Formulaic Exercise. *Business Valuation Review*, Volume 36, Number 4, 117-123.